

Appl. No. 10/713,353
Amdt. dated March 14, 2006
Reply to Office Action of December 15, 2005

Amendments to the Drawings:

The attached sheets of drawings include changes to Figs. 2-4. These sheets replace the original sheets including Figs. 2-4. In Figure 2, the electrical connection directly shunting the DC INPUT to ground has been eliminated. In Figures 3 and 4, several typographical errors have been corrected.

Attachment: Replacement Sheets
Annotated Sheets Showing Changes

REMARKS

I. Amendments to the Specification

The specification has been amended on pages 2, 7 and 9 to address minor typographical and editorial errors. The amendments add no new subject matter.

II. Amendments to the Figures

Figures 2-4 have been amended to address minor typographical and editorial errors. The changes are provided for clarity and add no new subject matter.

III. Status of Claims

After the above amendments, claims 1-35 are pending. Claims 1, 8 and 20 are independent. Applicant thanks the Examiner for the indication of allowable subject matter in claims 23-34.

IV. Rejection of claims 1-4, 6-10, 12 and 13 under 35 U.S.C. 102(b) as being anticipated by Matsuda et al. (US 5,739,667)

The Examiner has rejected claims 1-4, 6-10, 12 and 13 under 35 U.S.C. 102(b) as anticipated by Matsuda et al. (US 5,739,667, hereinafter "Matsuda"). Applicant respectfully requests reconsideration of these rejections because Matsuda, neither explicitly nor implicitly, teaches or suggests all of the limitations of these claims. In particular, claim 1 as amended herein requires:

- A digital device capable of recharging a rechargeable battery comprising;
- a consuming current detect unit for detecting a consuming current input to the digital device;
- a control unit for generating a control signal based on the consuming current and a battery recharging current;
- a recharging current detect unit for detecting the battery recharging current as the battery is recharged; and
- a recharging control unit for regulating the current to the rechargeable battery in proportion to the control signal output from the control unit and the battery recharging

current detected by the recharging current detect unit. (Emphasis added).

As amended, claim 1 of the invention requires a control unit for generating a control signal based on the consuming current and a battery recharging current. In other words, as seen in figure 2 a control unit 20 is supplied with input signals from the consuming current detect unit 10 *and* the recharging current detect unit 40. Also, claim 1 further requires a recharging control unit which regulates the battery recharging current in proportion to the control signal *and* the battery recharging current signal. Again with reference to figure 2, the recharging control unit 30 has an input from the control unit 20 as well as an input from the recharging current detect unit 40.

Matsuda does not teach or suggest such a structure in any of the embodiments. For example, as taught in Matsuda's figure 4 a recharging control unit 54 is provided with a battery recharging current signal (from resistors R_{0-4}) as well as a control signal from a control unit 56. However, the control unit 56 *only* receives input based on the consuming current (from element 55). The control unit 56 *does not* receive an input based on the battery recharging current as required by the amended claim. In fact, nowhere does Matsuda teach the generation of a control signal based on the consuming current *and* the battery recharging current which control signal is then supplied to a recharging control unit. Rather, the recharging device of Matsuda requires numerous integrated circuits. As discussed in the background of the present application, a "control unit for generating a control signal based on the consuming current and a battery recharging current" with "a recharging control unit for regulating the current to the rechargeable battery in proportion to the control signal output from the control unit and the battery recharging current detected by the recharging current detect unit" reduces the number of components required, as compared to Matsuda. That is, whereas the present invention uses a control unit (e.g. 20) to provide a control signal, Matsuda has in place several additional operational amplifiers (540-3, 4, 5 and 6), a PWM Comparator (542) and a triangular wave generator (541) to control the recharging current. Such additional components are eliminated by embodiments of the present invention which alleviates the increasing production costs.

Thus, Matsuda fails to teach or suggest, either explicitly or implicitly all the limitations of claim 1. In particular, Matsuda does not teach a control unit for generating a control signal based

on the consuming current and a battery recharging current, as recited in Applicant's claim 1.

Therefore, claim 1 is allowable over Matsuda for the reasons given above. Moreover, dependent claims 2-7 are allowable for the reasons given above by virtue of their dependence on claim 1.

Similar to claim 1, method claim 8 has been amended to recite the step of generating a control signal based on a detected consuming current *and* a detected battery recharge current which control signal is used to regulate the current to the battery. Again, Matsuda does not teach, and by virtue of not teaching the related structure cannot teach, such a method wherein a control signal is based on a detected consuming current and detected recharging current. Thus, Matsuda fails to teach or suggest, either explicitly or implicitly, all the limitations of claim 8 and thus claim 8 is allowable over Matsuda for the reasons given above and with reference to the arguments of claim 1. Moreover, dependent claims 9-19 and 35 are allowable by virtue of their dependence from claim 8.

V. Rejection of claim 20 under 35 U.S.C. 103(a) as obvious over Hutchinson, IV et al. (US 6,118,250)

The Examiner has rejected claim 20 under 35 U.S.C. 103(a) as obvious over Hutchinson, IV et al. (US 6,188,250, hereinafter "Hutchinson"). Applicant respectfully requests reconsideration of these rejections because Hutchinson does not make obvious the limitations of claim 20. In particular, claim 20 requires:

A method for recharging a rechargeable battery in a digital device comprising:
determining whether a voltage of the rechargeable battery is greater than 5 volts,
and if so, determining that the battery is partially discharged and performing a recharge operation according to a state of the digital device being used. (Emphasis added).

Hutchinson does not make obvious the claimed method. Nowhere does Hutchinson teach or suggest a recharge operation *according to a state of the digital device being used*. Rather, Hutchinson merely teaches a recharge method without regard to a state of a digital device. For example, the recharge method taught by Hutchinson in figure 5 only accounts for a battery voltage as shown in decision steps 204 and 210. Hutchinson's method does not account for a state of a digital device being used. Also, the column and lines cited by the Examiner (col. 3, lines 6-12) merely teach a multi-phased recharge approach (e.g. trickle, fast and top-off

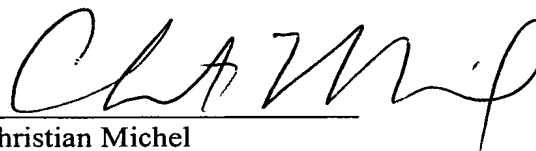
charging) but do not teach or suggest that the recharge is performed according to a state of the digital device. Finally, Hutchinson's battery control and charging circuit of figure 1 does not teach or suggest any signal input which would allow performing a battery recharge according to a state of the digital device being used. In fact, nowhere does Hutchinson teach or suggest that a recharge operation is based on anything but the battery voltage.

Thus, Hutchinson fails to teach or suggest, either explicitly or implicitly all the limitations of claim 20. In particular, Hutchinson does not teach performing a recharge operation *according to a state of the digital device being used*, as recited in Applicant's claim 20. Therefore, claim 20 is allowable over Matsuda for the reasons given above. Moreover, dependent claims 21-34 are allowable for the reasons given above by virtue of their dependence on claim 20.

VI. Conclusion

In view of the above, it is believed that the above-identified application is in condition for allowance, and notice to that effect is respectfully requested. Should the Examiner have any questions, the Examiner is encouraged to contact the undersigned at the telephone number indicated below.

Respectfully submitted,



Christian Michel
Reg. No. 46,300
Attorney for Applicant

Date: March 14, 2006

Roylance, Abrams, Berdo & Goodman, L.L.P.
1300 19th Street, N.W., Suite 600
Washington, D.C. 20036-2680
Main: (202) 659-9076
Direct: (202) 530-7372



FIG. 2

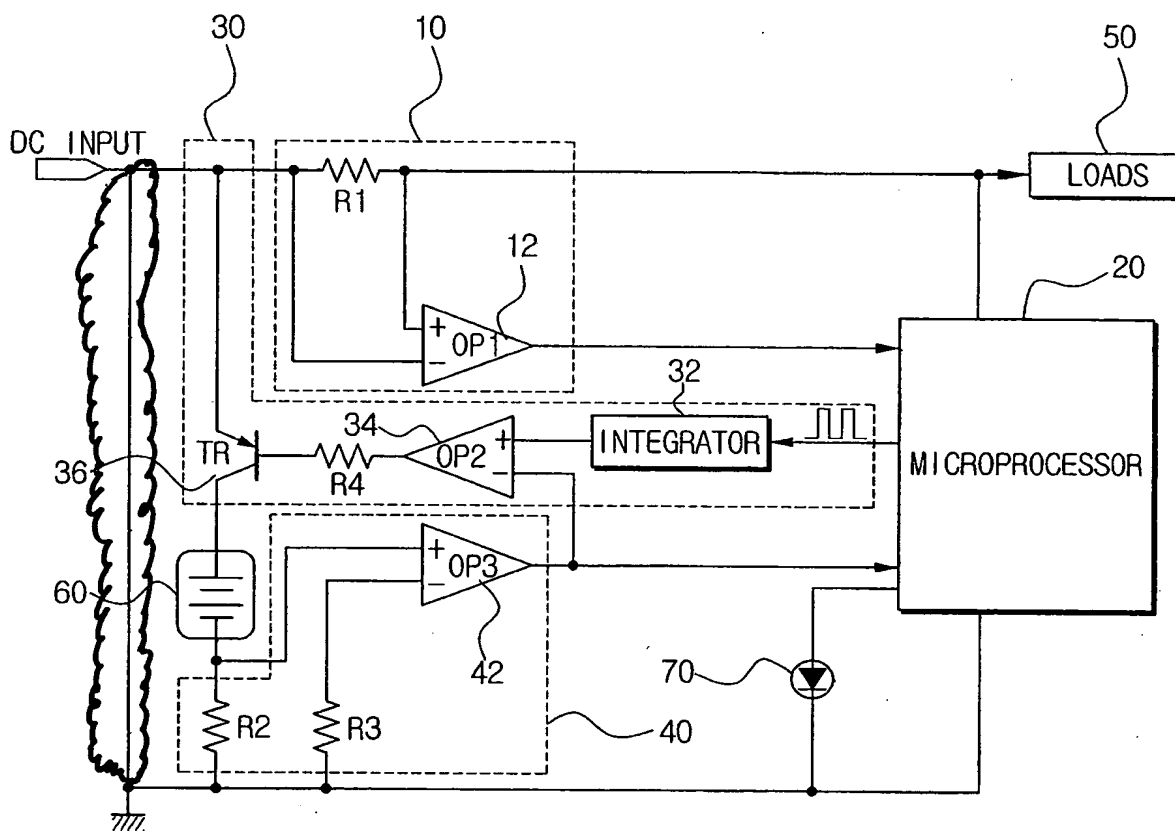


FIG. 3

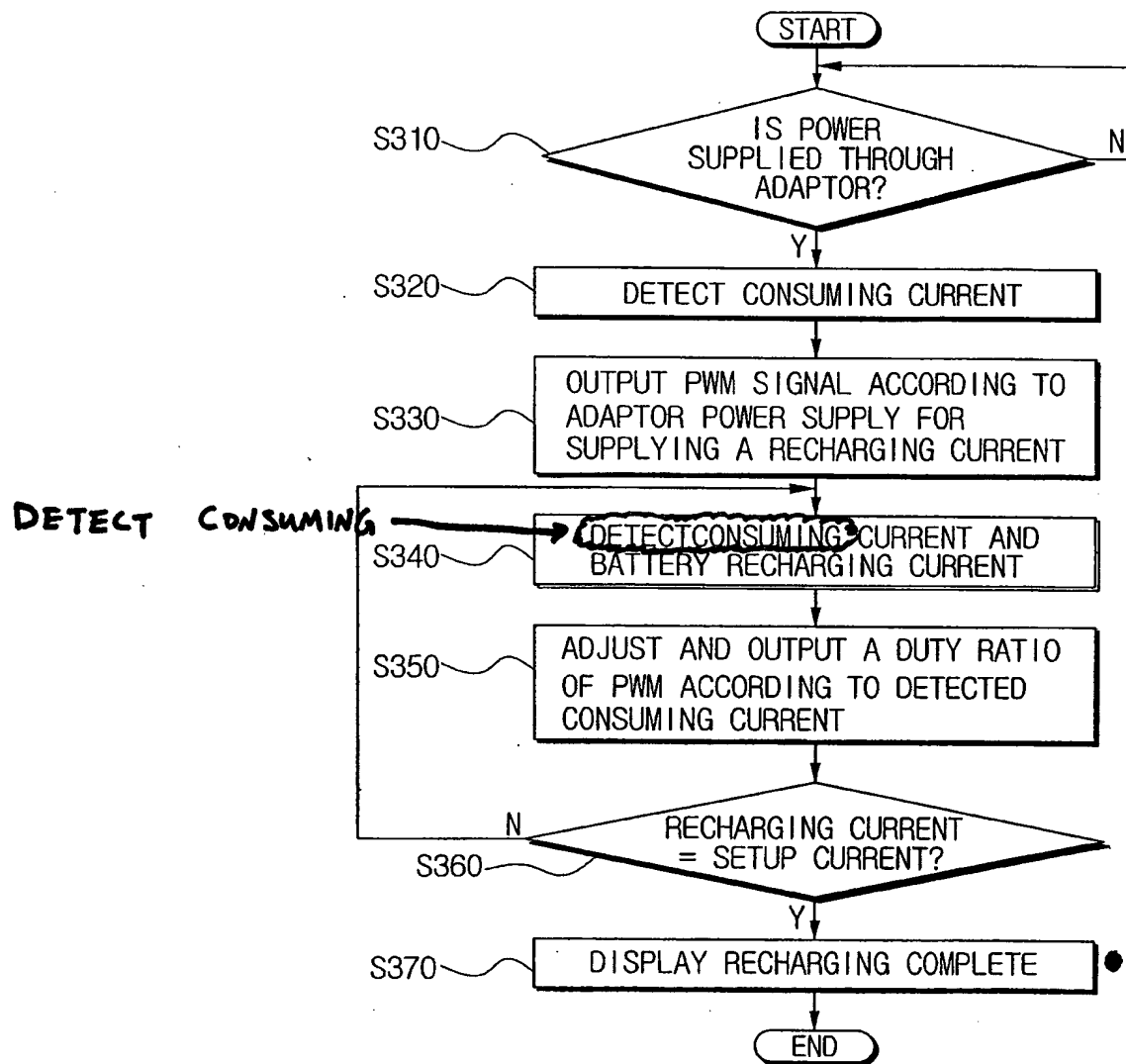


FIG. 4

